

I claim:

1. A method of selecting an agent that prevents cleavage of an APP substrate, said method comprising the steps of

5 (a) contacting a candidate agent with a  $\beta$ -secretase complex comprising cathepsin B and cathepsin L, wherein the contacting occurs in the presence of an APP substrate and under conditions that allow for cleavage of the APP substrate by said  $\beta$ -secretase complex; and

10 (b) selecting the agent that prevents the cleavage of the APP substrate by the  $\beta$ -secretase complex.

2. A method of decreasing the production of an A $\beta$  peptide by a cell comprising contacting the cell with the agent selected by the method of claim 1, thereby  
15 decreasing production of the A $\beta$  peptide by the cell.

3. A method of selecting an agent that prevents cleavage of an APP substrate, said method comprising the steps of

5 (a) contacting a candidate agent with a  $\beta$ -secretase species selected from the group consisting of cathepsin B and cathepsin L, wherein the contacting occurs in the presence of an APP substrate and under conditions that allow for cleavage of the APP substrate by said  $\beta$ -secretase species; and

10 (b) selecting the agent that prevents the cleavage of the APP substrate by the  $\beta$ -secretase species.

4. The method of claim 3, wherein the  $\beta$ -secretase species is cathepsin B.

15 5. The method of claim 3, wherein the  $\beta$ -secretase species is cathepsin L.

6. A method of decreasing the production of an A $\beta$  peptide by a cell comprising contacting the cell with the agent selected by the method of claim 1 or 3, thereby decreasing production of the A $\beta$  peptide by the cell.

20 7. The method of claim 6, wherein said agent inhibits an activity of cathepsin B.

8. The method of claim 6, wherein said agent inhibits an activity of cathepsin L.

9. The method of claim 6, wherein said agent inhibits an activity of cathepsin B and cathepsin L.

10. A method of decreasing production of an A $\beta$  peptide by an individual affected with a condition that is associated with aggregation of the A $\beta$  peptide into amyloid plaques comprising administering to the affected individual an effective amount of the agent selected by the method of claim 1 or 3, thereby decreasing production of the A $\beta$  peptide by the affected individual.

10 11. The method of claim 10, wherein decreasing production of the A $\beta$  peptide by the individual results in a reduction in said aggregation of the A $\beta$  peptide into amyloid plaques.

12. The method of claim 11, wherein said  
15 condition is Alzheimer's Disease.

13. A method for reducing the severity of a condition associated with the formation of beta amyloid plaques comprising administering an effective amount of an agent selected by the method of claim 1 or 3 to an  
20 individual affected with a condition associated with the formation of beta amyloid plaques, thereby decreasing formation of beta amyloid plaques by the affected individual.

14. A method of reducing the severity of a condition associated with an activity of cathepsin B comprising administering an effective amount of an agent selected by the method of claim 1 or 3 to the affected  
5 individual, thereby reducing the severity of the condition associated with an activity of cathepsin B in the affected individual.

15. A method of reducing the severity of a condition associated with an activity of cathepsin L  
10 comprising administering an effective amount of an agent selected by the method of claim 1 or 3 to the affected individual, thereby reducing the severity of the condition associated with an activity of cathepsin L in the affected individual.

15 16. A method of reducing the severity of a condition associated with an activity of cathepsin B and cathepsin L comprising administering an effective amount of an agent selected by the method of claim 1 or 3 to the affected individual, thereby reducing the severity of the  
20 condition associated with an activity of cathepsin B and cathepsin L in the affected individual.

17. A method of decreasing production of an A $\beta$  peptide by an individual affected with a condition that is associated with aggregation of the A $\beta$  peptide into amyloid  
25 plaques comprising administering to the affected individual an effective amount of the agent that inhibits an activity of cathepsin B, thereby decreasing production of the A $\beta$  peptide by the affected individual.

18. A method of decreasing production of an A $\beta$  peptide by an individual affected with a condition that is associated with aggregation of the A $\beta$  peptide into amyloid plaques comprising administering to the affected individual  
5 an effective amount of the agent that inhibits an activity of cathepsin L, thereby decreasing production of the A $\beta$  peptide by the affected individual.

19. A method of decreasing production of an A $\beta$  peptide by an individual affected with a condition that is  
10 associated with aggregation of the A $\beta$  peptide into amyloid plaques comprising administering to the affected individual an effective amount of the agent that inhibits an activity of cathepsin B and cathepsin L, thereby decreasing production of the A $\beta$  peptide by the affected individual.